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Editorial

The present issue of *CIT. Journal of Computing and Information Technology* is being published in the times of the coronavirus epidemics, in spite of the handicap caused by the respective measures for the containment of the disease, mostly because of the dedicated work of *CIT*'s Editorial Office and our technical support, as well as our editorial team. In this respect I would like to commend their work and perseverance.

At the beginning of this new volume – Vol. 28, let me also extend our welcome to the new member of the Editorial Board – Ivan Luković, who will help in editing contributions in the areas of data science, databases and information systems.

The current, March 2020 (Vol. 28, No. 1), issue of CIT brings papers from the areas of multi-agent systems, time series, software engineering and cybercrime detection, whose respective short summaries traditionally follow below.

The first paper in this issue, titled *Dispatching Requests for Agent-Based Online Vehicle Routing Problems with Time Windows*, and authored by Mahdi Zargayouna and Besma Zeddini, tackle a topic in the area of scheduling algorithms, namely the Vehicle Routing Problem (VRP), itself of great importance for practical applications in mass-market modern transportation like dynamic ridesharing or online food delivery. Specifically, the authors address an extreme case of dynamic VRP, known as VRP with Time Windows (VRPTW), where problem data are not completely known before the start of the optimization and, additionally, travelers expect responses to their requests in real time, i.e., within time windows. In order to meet the above requirement, they thus rely on the multi-agent paradigm, and propose the application of a multi-agent system (MAS) coupled with a regret insertion heuristic technique. Three dispatching protocols (centralized, decentralized and hybrid) are experimentally evaluated with respect to response time to online travelers, using both sequential and distributed implementation. This evaluation shows an average 32.80% improvement of the centralized dispatching protocol over the distributed one for the sequential implementation, as well as an average 59.66% improvement of the hybrid dispatching protocol over the centralized one for the distributed implementation.

Ruizhe Ma, Diwei Zheng and Li Yan focus on indexing of uncertain time series in the second paper, titled *Fast Online Similarity Search for Uncertain Time Series*. The study of time series stems from their ever-increasing use in different new streaming applications, like GIS detection, stock market and medical monitoring, which are supported both by the growth of computing power and by advances in data mining technology. Since within such a framework streaming data always incur with uncertainty, proper consideration should be given to such data, among which is the use of uncertain queries. In order to achieve fast retrieval of online data, which means ensuring an increased throughput along with reduced latency, the authors propose a spatial indexing structure named KDR-tree that can be updated and searched quickly in a real-time environment, itself combining the structure of an index KD-tree with the retrieval algorithm of R-tree. The authors validated the accuracy of the query results and the timeliness of the algorithm devised through extensive experimentation on synthetic and real data, with the results thus obtained supporting their claim that this index structure has better efficiency than the conventional ones, while maintaining a similar true positive ratio.

The paper *Investigating Agile Requirements Engineering Practices in the South African Software Development* by Nalindren Naicker and Manoj S. Maharaj presents a study on practices related to

agile requirements engineering in the South African software development industry. Agile Software Development (ASD) presents itself as a suitable device to meet the rapid demands for web and mobile applications production, which are nowadays proliferating, with Requirements Engineering (RE), as the earliest stage of software production, having the responsibility for ensuring the development of high quality and safe applications. Contrary to classical software development, Agile RE is an interactive process complying to the overall ASD methodology of incremental system construction. Enforcing rigorous processes during this stage thus provides the basis for a successful and timely end-product. ASD's dynamic nature, along with constraints inherent to its RE stage, prompted the authors to carry out a study to assess secure agile RE practices, with key areas including requirements elicitation; security requirements elicitation; security approach; security training; customizer involvement; prioritization of requirements; and ASD RE satisfaction. The resulting qualitative study was conducted in seventeen South African software development companies, based on structured interviews and document reviews as the primary data collection instruments. The study results then helped in drafting a number of recommendations meant to guide regular software developers in effecting good Agile RE practices.

The last paper of the issue delves into the area of cybercrime detection. Jian Feng, Ying Zhang and Yuqiang Qiao describe a method for fighting phishing, one of presently quite popular fraudulent methods to obtain sensitive information, usually in the form of a malicious web site impersonating a legitimate ("benign") one. In their paper, titled *A Detection Method for Phishing Web Page Using DOM-Based Doc2Vec Model*, the authors propose a novel method that can detect phishing web pages based on their clustering. The method, eponymously named Doc2Vec model over DOM (DoD), basically consists of a number of steps relying on parsing both benign and known phishing web pages into the respective DOM (Document Object Model) trees. These trees are subsequently vectorized, applying the Doc2Vec model, and inputted to a trained classifier, driven by a semantic rather than syntactic metrics, to finally obtain a predicted label (phishing or benign). DoD was experimentally validated against other document-based representation methods using well known Alexa web pages as the pool of benign sites and PhishTank.com as the pool of phishing ones.

Vlado Glavinić
Editor-in-Chief